

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

5 Applicant(s): Boer et al.
Case: 8-28-6-6
Serial No.: 10/672,657
Filing Date: September 26, 2003
10 Group: 2464
Examiner: Pawaris Sinkantarakorn

Title: Method and Apparatus for Detecting a Collision in a Carrier Sense Multiple
Access Wireless System
15

REPLY BRIEF

20 Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

25 Sir:

Appellants hereby reply to the Examiner's Answer, mailed November 9, 2010
(referred to hereinafter as "the Examiner's Answer"), in an Appeal of the final rejection of
claims 1-10 and 18-23 in the above-identified patent application.

REAL PARTY IN INTEREST

A statement identifying the real party in interest is contained in Appellants'
Appeal Brief.

RELATED APPEALS AND INTERFERENCES

A statement identifying related appeals is contained in Appellants' Appeal Brief.

STATUS OF CLAIMS

A statement identifying the status of the claims is contained in Appellants' Appeal
40 Brief.

STATUS OF AMENDMENTS

A statement identifying the status of the amendments is contained in Appellants' Appeal Brief.

5 SUMMARY OF CLAIMED SUBJECT MATTER

A Summary of the Invention is contained in Appellants' Appeal Brief.

STATEMENT OF GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

10 A statement identifying the grounds of rejection to be reviewed on appeal is contained in Appellants' Appeal Brief.

CLAIMS APPEALED

15 A copy of the appealed claims is contained in an Appendix of Appellants' Appeal Brief.

ARGUMENT

Section 101 Rejections

20 Claims 18-23 were rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter. In particular, the Examiner asserts that, while the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process.

25 Appellants note that independent claim 18 requires a *wireless communication network* and is therefore tied to another statutory category. In addition, independent claim 18 requires *wherein one or more of said steps are performed by a processor*. In order to perform the cited one or more steps, a person of ordinary skill in the art would recognize that the claimed processor is inherently specifically programmed to execute the cited steps(s).

Thus, Appellants respectfully request that the section 101 rejections be withdrawn.

Independent Claims 1 and 18

Independent claim 1 and 18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Wang and Currivan et al. in view of Kanterakis et al. In particular, the Examiner asserts that Wang discloses a collision detector that monitors a wireless medium for collisions of the acknowledgement message (col. 5, line 66, to col. 6, line 8). Appellants also note that the Examiner acknowledges that Wang does not disclose that the collision detector evaluates an energy level, preamble detection, and payload detection. The Examiner asserts, however, that Currivan et al. discloses a collision detector that monitors for collisions based on an energy level and preamble detection (paragraphs 55-58 and 70-78; a collision is detected based on a SNR indication signal and a threshold signal and a preamble detection; where the SNR indication signal represents a ratio of signal energy level and noise energy level; for example, an in-phase collision is detected when the output signal 459 is low and the output signal 457 is high, where the output signal 459 is related to the SNR indication signal 438 and the output signal 457 is related to the power indication signal). Furthermore, the Examiner acknowledges that Wang and Currivan do not expressly disclose a collision detector that monitors for collisions based on payload detection, but asserts that Kanterakis discloses this limitation (col. 6, lines 45-50, and col. 9, lines 8-17).

Appellants note that independent claims 1 and 18 require a controller configured to monitor for an acknowledgement (ACK) message transmitted by a second wireless communication device in response to a message transmitted by said first wireless communication device, and a collision detector that monitors a wireless medium for collisions of said acknowledgement message based on a comparison of an energy level and an energy level threshold, preamble detection, and payload detection. Support for this limitation can be found on page 7, lines 10-20, of the originally filed disclosure.

First, as the Examiner acknowledges, Wang does not disclose a collision detector that monitors a wireless medium for collisions based on an energy level, preamble detection, and payload detection.

Appellants also note that, in par. 0076 of Currivan et al., it is clear that output signal 457 indicates the power of the data portion of a burst transmission. In Table 1, it is clear that output signal 457 does **not** correlate with whether a collision is detected. In fact, a collision can be detected if the output signal 457 is high (second row), medium (fourth row), low (sixth

row) or high (seventh row). Thus, a collision is *not* detected in Currivan et al. based on a comparison of an energy level and an energy level threshold, as required by independent claims 1 and 18.

Regarding the Examiner's previous assertion that Currivan discloses that a
5 collision is detected when the output signal 459 indicates the average SNR of a burst
transmission is low, Appellants note that a SNR is a *signal-to-noise ratio* and is *not* a measured
energy level (i.e., not a measured level of energy), as would be apparent to a person of ordinary
skill in the art. Thus, Currivan does *not* disclose or suggest determining an energy level or
10 monitoring said wireless communication network to detect a collision of said acknowledgement
message based on a comparison of an energy level and an energy level threshold or based on a
comparison of an energy level and an energy level threshold, preamble detection, and payload
detection.

In the Response to Arguments section of the final Office Action, the Examiner
asserts that Currivan teaches that a collision is detected based on a SNR indication signal and a
15 threshold signal, where the SNR indication signal represents a ratio of (a) signal energy level and
(a) noise energy level, and that Currivan therefore discloses a collision based on a comparison of
an energy level and an energy level threshold.

Contrary to the Examiner's assertion (and as noted above), a SNR is a *signal-to-*
noise ratio and is *not* a measured energy level (i.e., not a measured level of energy), as would be
20 apparent to a person of ordinary skill in the art. Furthermore, the generation of a SNR indication
signal (a *signal-to-noise ratio*) requires calculating a ratio of a signal energy level and a noise
energy level; an energy level threshold is *not* required for this calculation. Moreover, Currivan
does not disclose or suggest an energy level threshold in this context.

In the Examiner's Answer (page 16), the Examiner asserts that the signal energy
25 level as part of the SNR indication signal corresponds to the measured energy level and the
threshold signal 446 corresponds to the energy level threshold.

Appellants note that threshold signal 446 is a threshold corresponding to a *signal-*
to-noise ratio; threshold signal 446 does *not* correspond to a part of the SNR indication signal
and does *not* correspond to an energy level threshold.

30 Thus, even as combined in the manner suggested by the Examiner, Wang and
Currivan *do not teach every element of the independent claims*. Furthermore, based on the KSR

considerations discussed hereinafter, the combination/modification suggested by the Examiner is not appropriate.

KSR Considerations

An Examiner must establish “an apparent reason to combine ... known elements.”

- 5 *KSR International Co. v. Teleflex Inc. (KSR)*, 550 U.S. ___, 82 USPQ2d 1385 (2007). Here, the Examiner merely states that it would have been obvious to implement a collision detection module as taught by Currivan into the collision detecting apparatus of Wang since it enables accurate detection of collisions.

- 10 Appellants are claiming a new technique for collision detection in a communication network. There is *no* suggestion in Wang or in Currivan, alone or in combination, for a collision detector that monitors a wireless medium for collisions of said acknowledgement message based on a comparison of an energy level and an energy level threshold, based on a comparison of an energy level and an energy level threshold and preamble detection or based on a comparison of an energy level and an energy level threshold, preamble
15 detection, and payload detection.

- Currvan’s teaching to utilize a SNR ratio *teaches away* from the present invention. The *KSR* Court discussed in some detail *United States v. Adams*, 383 U.S. 39 (1966), stating in part that in that case, “[t]he Court relied upon the corollary principle that when the prior art teaches away from combining certain known elements, discovery of a successful means
20 of combining them is more likely to be nonobvious.” (*KSR* Opinion at p. 12). Thus, there is no reason to make the asserted combination/modification.

In the Examiner’s Answer (page 16), the Examiner asserts that Currivan’s teaching to utilize the SNR ratio provides accurate collision detection and, thus, Currivan does not teach away from Wang et al.

- 25 Appellants maintain that Currivan’s teaching to utilize a SNR ratio *teaches away* from the claimed invention. The cited rejection is based on a combination of references *proposed by the Examiner*. The embodiment suggested by the Examiner is *not* disclosed in any of the references cited by the Examiner. In such a case, a teaching away does *not* require that a reference discredit or criticize a claimed embodiment. Applicants maintain that Currivan teaches
30 away from the claimed invention. Moreover, a person of ordinary skill in the art would *not* be motivated to combine the references as suggested by the Examiner and, in addition, would *not*

have a reasonable anticipation of success.

Thus, Wang, Currivan, and Kanterakis, alone or in combination, do not disclose or suggest a controller configured to monitor for an acknowledgement (ACK) message transmitted by a second wireless communication device in response to a message transmitted by said first wireless communication device, and a collision detector that monitors a wireless medium for collisions of said acknowledgement message based on a comparison of an energy level and an energy level threshold, preamble detection, and payload detection, as required by independent claim 1, and do not disclose or suggest monitoring said wireless communication network for an acknowledgement message received in response to transmitted data; and monitoring said wireless communication network to detect a collision of said acknowledgement message based on a comparison of an energy level and an energy level threshold, preamble detection, and payload detection, as required by independent claim 18.

Conclusion

The rejections of the cited claims under section 103 in view of Wang, Currivan, and Kanterakis, alone or in any combination, are therefore believed to be improper and should be withdrawn. The remaining rejected dependent claims are believed allowable for at least the reasons identified above with respect to the independent claims.

The attention of the Examiner and the Appeal Board to this matter is appreciated.

Respectfully,



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Date: January 3, 2011

APPENDIX

1. A first wireless communication device, comprising:

5 a controller configured to monitor for an acknowledgement (ACK) message transmitted by a second wireless communication device in response to a message transmitted by said first wireless communication device, and

a collision detector that monitors a wireless medium for collisions of said acknowledgement message based on a comparison of an energy level and an energy level threshold, preamble detection, and payload detection.

10 2. The first wireless communication device of claim 1, wherein said collision detector evaluates said energy level and detects a collision based on said energy level and said preamble detection or based on said energy level and said payload detection.

15 3. The first wireless communication device of claim 2, wherein said collision detector includes a payload detector and detects a collision based on said detected payload.

4. The first wireless communication device of claim 3, wherein said collision detector includes a preamble detector and detects a collision based on said detected preamble.

20 5. The first wireless communication device of claim 1, wherein said collision detector is activated after said first wireless communication device transmits data.

25 6. The first wireless communication device of claim 1, wherein said collision detector does not detect a collision if an ACK message or data header is received.

7. The first wireless communication device of claim 1, wherein said device is implemented in accordance with the IEEE 802.11 Standard.

30 8. The first wireless communication device of claim 1, wherein said controller determines if said second wireless communication device correctly received said transmitted

message by monitoring said wireless medium.

5 9. The first wireless communication device of claim 1, wherein said controller determines that said second wireless communication device did not likely receive said message if a collision is detected.

10 10. The first wireless communication device of claim 1, wherein said controller determines that said collision was a cause of not receiving said ACK message.

10 11-17 (Cancelled).

15 18. A method for detecting a collision in a wireless communication network, said method comprising the steps of:

15 monitoring said wireless communication network for an acknowledgement message received in response to transmitted data; and

20 monitoring said wireless communication network to detect a collision of said acknowledgement message based on a comparison of an energy level and an energy level threshold, preamble detection, and payload detection, wherein one or more of said steps are performed by a processor.

20 19. The method of claim 18, wherein said monitoring to detect said collision step further comprises the step of detecting a payload and said collision detection is further based on said detected payload.

25 20. The method of claim 18, wherein said monitoring to detect said collision step further comprises the step of detecting a preamble and said collision detection is further based on said detected preamble.

30 21. The method of claim 18, wherein said monitoring steps are performed after said data is transmitted.

22. The method of claim 18, wherein said monitoring for said acknowledgement message step does not detect a collision if an ACK message or data header is received.

23. The method of claim 18, wherein said method is implemented in accordance
5 with the IEEE 802.11 Standard.

EVIDENCE APPENDIX

There is no evidence submitted pursuant to § 1.130, 1.131, or 1.132 or entered by the Examiner and relied upon by appellant.

RELATED PROCEEDINGS APPENDIX

There are no known decisions rendered by a court or the Board in any proceeding identified pursuant to paragraph (c)(1)(ii) of 37 CFR 41.37.